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AWARD NUMBER: W81XWH-05-1-0320

TITLE: Symptom Prevalence of PTSD, Anxiety, Depression, Effect of Exposure and Mediating Factors on a Population from Southern Lebanon

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REPORT DATE: April 2006

TYPE OF REPORT: Final

PREPARED FOR: U.S. Army Medical Research and Materiel Command
               Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;
                        Distribution Unlimited

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE (DD-MM-YYYY) April 2006	2. REPORT TYPE Final	3. DATES COVERED (From - To) 15 Mar 05 – 14 Mar 06

4. TITLE AND SUBTITLE

Symptom Prevalence of PTSD, Anxiety, Depression, Effect of Exposure and Mediating Factors on a Population from Southern Lebanon

5a. CONTRACT NUMBER

5b. GRANT NUMBER
W81XWH-05-1-0320

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

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5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

American University of Beirut
New York, New York 10017-2303

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The Israeli occupation of the South of Lebanon has affected the mental and physical health of the people living in the region. The current research aimed at studying the exposure to war related traumatic events, establishing the prevalence of Posttraumatic Stress Disorder (PTSD), and level of General Psychiatric Morbidity, as well as looking at some predictor variables for PTSD among the general population. The sample consisted of 256 randomly selected participants in two adjacent towns. The instruments used were the Harvard Trauma Questionnaire and the General Health Questionnaire (GHQ-28). The majority of the respondents had experienced one or more war-related traumatic events. The overall prevalence of PTSD was found to be 29.3%; among females the prevalence was 36.6% and among males 20.9%. The level of general psychiatric morbidity was high compared to studies in other countries. Both PTSD and psychiatric morbidity correlated highly with PTSD and general psychiatric morbidity. The main predictor for PTSD was the degree of exposure to traumatic events.

15. Subject Terms (keywords previously assigned to proposal abstract or terms which apply to this award)

PTSD, war trauma, predictors, South Lebanon

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON USAMRMC
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U	UU	55	19b. TELEPHONE NUMBER (include area code)

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

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Introduction

Events in connection with the Israeli occupation of South Lebanon have left their traces on the psychological and physical health of the population in the area. The purpose of the present study was to investigate the exposure to traumatic events, the prevalence of Posttraumatic Stress Disorder (PTSD), general psychiatric morbidity and some modulating factors in a sample from the general population in South Lebanon. A survey on 256 persons was conducted in two adjacent towns in the formerly occupied region.

Aims

In accordance with Task 1. stated under the Statement of Work in the original proposal sent to the USAMRAA, the first focus of the study was to investigate the traumatic events that the population in two towns in South Lebanon had been subjected to, as well as the prevalence of PTSD and symptoms of general psychiatric morbidity, including anxiety and depression.

In accordance with Task 2. in the Statement of Work, the second focus of the study was to investigate whether symptoms of PTSD and psychiatric morbidity, including depression and anxiety could be predicted by the extent of exposure to traumatic events.

In accordance with Task 3. in the Statement of Work, the third focus of the study was to investigate which socio-economic and life-style factors can mediate the impact of exposure to traumatic events.

Method

The population for the study came from two adjacent towns, hereinafter called town A and town B. Both towns are situated in South Lebanon, in the region formerly occupied by Israel. Trained graduate students form the American University of Beirut interviewed 256 randomly selected persons in heir homes and workplaces. The sample consisted of men and women over twenty years of age, who were permanent residents of

their town, and who had lived in the area for at least two years during the occupation. For details on sample size calculation, sampling method and procedure please refer to Farhood, Dimassi and Lehtinen (in press) (Appendix 1).

To assess *exposure to traumatic evens* and symptoms of *PTSD* an Arabic translation of the Harvard Trauma Questionnaire (HTQ) was used. From the answers to this questionnaire an exposure score taking in account the number and intensity of exposure to traumatic events were calculated for each participant. Each participant also received a PTSD score, depending of the number and intensity of symptoms they endorsed. In addition, each participant was classified as either having PTSD or not having PTSD, based on their diagnose score, calculated as suggested in the manual for the Harvard Trauma Questionnaire. For description and psychometric properties of this instrument, please refer to Farhood, Dimassi and Lehtinen (in press).

To assess *general psychiatric morbidity*, including symptoms of somatization, anxiety, social dysfunction and severe depression, the General Health Questionnaire (GHQ-28) was used. For this instrument, each participant received a total score, as well as a score for each of the four subscales. For a more extensive description of this instrument and is psychometric properties, please refer to Farhood, Dimassi and Lehtinen (in press).

In addition, the participants were asked about *demographic information,* recent *life-events*, *life-style* and *social support*. The questionnaire on demographic data concerned age, gender, education, occupation, living conditions, and lifestyle. The lifestyle questions asked about weekly rates of cigarette smoking, "argileh" (water-pipe), alcohol consumption, drug or tranquilizer consumption, exercise, sleeping and working hours including domestic work, per day. Questions on life-events included questions on general life-events such as death of a loved-one, birth of a child, marriage, etc., problems in social relations, such as conflict with spouse or with friends, and about financial problems, such as loss of job, or loans due. The social support questionnaire consisted of 8 questions adapted from a study on prisoners of war by Saab et al. (2003), with slightly altered wording so that it reflected general war experiences as opposed to experience as prisoner of war. The questions concerned availability of emotional and financial support, as well as a sense of being needed and appreciated by others. All questions have been used in previous studies in Lebanon (Farhood & Nourreddine, 2003).

Results

The sample consisted of 119 males and 137 females, in total 129 from the first village, and 127 from the second village. The mean age was 40 (±15.9) years. Less than high-school level of education was reported by 46.3% of the males and 44.8% of the females (p≤ .7870). Of the males, 57.1% reported to be working, compared to 27.2% of women (p≤ .0001). Of the males, 56.3% reported being married, compared to 62.5% of the females (p≤ .0025). For further details on population distribution for age, education, employment and marital status, please refer to Table 1. in Farhood, Dimassi and Lehtinen (in press).

Almost the whole sample had been in some way exposed to a traumatic event, either by hearing about one, witnessing or personally experiencing one. Exposure to at least one traumatic event was reported by 86.7%, witnessing a traumatic event by 82.4%, and hearing about a traumatic event by 97.9% of the sample. The most frequently experienced traumatic event was confinement to home because of danger outside, experienced by 65.5% of the total sample. For further details of frequency and degree of exposure to the traumatic events listed in the HTQ, please refer to Table 2. in Farhood, Dimassi and Lehtinen (in press).

The prevalence of PTSD among females was 36.6% and among males 20.9% (p≤ .0067). The overall prevalence was 29.3%. The PTSD prevalence was higher in the older age groups; over 40% in participants over 40 years of age, compared to 16.4% in those 20-29 years of age. The difference between age groups was statistically significant (p≤ .0064). PTSD was also higher in those who had a low level of education (p≤ .0004) and those who were married (p≤ .0123). For details on PTSD prevalence and distribution by gender, age, education, employment and marital status, please refer to Table 3. in Farhood, Dimassi and Lehtinen (in press).

The mean score for the GHQ-28 was 10.46, maximum score being 28. The correlation with the PTSD symptom score was high, r = .73 (p≤ .0001). The mean scores for the subscales were 2.19 for somatization, 2.15 for anxiety, 4.36 for social dysfunction and 1.75 for severe depression, with a maximum score of 7 for each scale. All of the subscales also correlated with the PTSD symptom score (p≤ .01). For further details, please refer to Table 4. in Farhood, Dimassi and Lehtinen (in press).

The mean exposure score, as calculated according to the HTQ manual, was 34.8 (±25.3) for males, and 30.4 (±21.7) for females (p≤ .1296). The mean exposure score for town A was 29.5 (±23.4), and for town B, 35.4 (±23.3) (p≤ .0453). For persons with PTSD, the mean exposure score was 46.4 (±26.7), compared to 27.7 (±19.3) in those without PTSD (p≤ .0001). For exposure scores, please see Table 5. below.

(UNPUBLISHED)

Table 5. Mean exposure scores and standard deviations for PTSD, gender and town					
PTSD		Gender		Town	
Present M (SD)	Absent M (SD)	Male M (SD)	Female M (SD)	A M (SD)	B M (SD)
46.4 (±26.7)	27.7 (±19.3)	34.8 (±25.3)	30.4 (±21.7)	29.5 (±23.4)	35.4 (±23.3)
	p≤ .0001		p≤ .1296		p≤ .0453

The correlation between exposure and PTSD symptom score was 0.432 (p≤ .0001). The correlation between the exposure score and the GHQ-28 total score was 0.316 p≤ .0001). The correlation between the exposure score and the GHQ somatization subscale was 0.334 (p≤ .0001), anxiety subscale 0.332 (p≤ .0001), social dysfunction 0.097 (p≤ .1222) and severe depression subscale 0.137 (p≤ .0280). For details on correlations of the exposure score, please see Table 6. below.

(UNPUBLISHED)

Table 6. Correlations for exposure score with PTSD score and GHQ score with subscales.					
PTSD scr. R	GHQ Tot. r	GHQ-1 r	GHQ-2 r	GHQ-3 r	GHQ-4 r
0.432	0.316	0.334	0.332	0.097	0.137
p≤ .0001	p≤ .0001	p≤ .0001	p≤ .0001	p≤ .1222	p≤ .0280

For those with PTSD, the mean number of traumatic events heard about was 9.61 (±5.4), compared to 6.7 (±4.9) in those without PTSD (p≤ .0001). For those with PTSD, the mean number of traumatic events witnessed was 6.71 (±5.11), compared to 3.51 (±3.59) in those without PTSD (p≤ .0001). For those with PTSD the mean number of traumatic events experienced was 5.84 (±3.80), compared to 3.50 (±3.09) in those without PTSD (p≤ .0001). The univariate correlation between PTSD symptom score and hearing about a traumatic event was 0.276 (p≤ .0001), between the symptom score and

witnessing a traumatic event 0.369 (p≤ .0001), and between PTSD score and experiencing a traumatic event was 0.384 (p≤ .0001). In a regression model where hearing about a traumatic event, witnessing a traumatic event and experiencing a traumatic event were entered as predictors, only witnessing R= .028 and experiencing a traumatic events R= .0.52 were significant (p≤ .0406 and p≤ .0002). For further details on means, correlations and regression analysis for hearing, witnessing and experiencing a traumatic event, please refer to Table 7. below.

(UNPUBLISHED)

Table 7. Hearing, witnessing and experiencing traumatic events; means, correlations, and multiple regression analysis for PTSD			
	Hearing	**Witnessing**	**Experiencing**
PTSD (diagn.)			
Present M(SD)	9.61 (±5.4)	6.71 (±5.11)	5.94 (±3.80)
Absent M (SD)	6.7 (±4.9)	3.51 (±3.59)	3.50 (±3.09)
p-value	.0001	.0001	.0001
Univar. correlation; PTSD score			
R	0.276	0.369	0.384
p-value	.0001	.0001	.0001
Multip. regression; PTSD score			
R	0.010	0.028	0.052
SD	0.010	0.014	0.014
p-value	.2981	.0406	.0002

To look at the relationship between the different predictor variables and PTSD the predictors were grouped into four groups; demographic, life-style, stressor and mental health variables. The predictors that were found to be significantly related to PTSD were combined into a total model to best predict PTSD. At the bivariate level; statistical significance was found for gender, martial status, educational level, age, number of children, social support score, cigarettes, social problems, tranquilizers, receiving psychiatric treatment, as well as all four subscales for the General Health Questionnaire

(GHQ-28). Exercise and sleeping hours were borderline significant. For differences in number and mean values for those with PTSD, compared to those without PTSD, please refer to Table 8. below.

(UNPUBLISHED)

Table. 8. Predictor variables				
Demographic and socio-economic variables				
	Total N(%)	**PTSD N(%)**	**NoPTSD N(%)**	**p-value**
Gender				
Male	119 (46.7%)	24 (20.9%)	91 (79.1%)	
Female	136 (53.3%)	49 (36.6%)	85 (63.4%)	0.0067
Marital status				
Married	103 (40.4%)	52 (34.9%)	97 (65.1%)	
Not married	152 (59.6%)	21 (21.0%)	79 (79.0%)	0.0182
Educational level				
Illiterate	16 (6.3%)	11 (68.8%)	5 (31.3%)	
Elementary	100 (39.2%)	32 (33.3%)	64 (66.7%)	
Secondary	77 (30.2%)	20 (26.3%)	56 (73.7%)	
Higher	62 (24.3%)	10 (16.4%)	51 (83.6%)	0.0004
Employment status				
Employed	105 (41.2%)	24 (24.2%)	75 (75.8%)	
Not employed	150 (58.8%)	49 (32.7%)	101 (67.3%)	0.1530
	M ± SD	**M ± SD**	**M ± SD**	
Age	40.0 ± 15.9	44.2 ± 14.8	38.7 ± 16.2	0.0134
Number of childr.	3.5 ± 1.6	4.0 ± 1.9	3.2 ± 1.4	0.0102
# of residents	4.6 ± 1.8	4.5 ± 1.9	4.6 ± 1.8	0.7151
Social support scr.	5.9 ± 1.5	5.5 ± 1.5	6.1 ± 1.4	0.0107

Life-Style variables				
Exercise				
>1/week	78 (31.2%)	17 (21.8%)	61 (78.2%)	
≤1/week	12 (4.8%)	2 (16.7%)	10 (83.3%)	
No exercise	160 (64.0%)	54 (35.1%)	100 (64.9%)	0.0670
Cigarettes				
Smoker	83 (33.1%)	36 (43.4%)	47 (56.6%)	
Non-smoker	168 (66.9%)	37 (22.7%)	126 (77.3%)	0.0008
"argileh"				
Smoker	28 (11.1%)	6 (22.2%)	21 (77.9%)	
Non-smoker	224 (88.9%)	66 (30.0%)	154 (70.0%)	0.4013
Alcohol				
User	51 (20.2%)	13 (25.5%)	38 (74.5%)	
Non-user	202 (79.8%)	60 (30.5%)	137 (69.5%)	0.4879
	M ± SD	M ± SD	M ± SD	
Sleeping hours	7.3 ± 2.1	6.9 ± 2.6	7.5 ± 1.9	0.0674
Working hours	8.3 ± 3.7	7.8 ± 3.9	8.3 ± 3.6	0.3579

Stressors				
Positive life events				
Present	42 (16.5%)	11 (26.8%)	30 (73.2%)	
Absent	212 (83.5%)	61 (29.5%)	146 (70.5%)	0.7337
Negat. Life events				
Present	100 (39.2%)	32 (32.7%)	66 (67.4%)	
Absent	155 (60.8%)	41 (27.2%)	110 (72.9%)	0.3516
Social problems				
Present	69 (27.1%)	32 (47.1%)	36 (52.9%)	
Absent	186 (72.9%)	41 (22.7%)	140 (77.4%)	0.0002
Financial problems				
Present	223 (87.5%)	67 (30.6%)	152 (69.4%)	
Absent	32 (12.6%)	6 (20.0%)	24 (80.0%)	0.2319

Mental health			
Tranquilizers			
User	20 (7.9%)	13 (65.0%)	7 (35.0%)	
Non-user	233 (92.1%)	60 (26.3%)	168 (73.7%)	0.0003
Illicit drugs			
User	5 (2.0%)	3 (60.0%)	2 (40.0%)	
Non-user	249 (98.0%)	70 (28.7%)	174 (71.3%)	0.1279
Psychiatric treatm.			
Ever treated	19 (7.5%)	17 (89.5%)	2 (10.5%)	
Never treated	236 (92.6%)	56 (24.4%)	174 (76.0%)	<0.0001
	M ± SD	**M ± SD**	**M ± SD**	
Gen. Health Quest.			
GHQ-1Somat.	2.2 ± 1.8	3.7 ± 2.1	1.6 ± 1.2	<0.0001
GHQ-2 Anx.	2.2 ± 2.2	4.3 ± 2.2	1.3 ± 1.6	<0.0001
GHQ-3 So. D.	4.4 ± 1.5	4.7 ± 1.4	4.2 ± 1.5	0.0249
GHQ-4 Depr.	1.8 ± 1.8	3.1 ± 1.8	1.2 ± 1.5	<0.0001
GHQ Total	10.5 ± 5.5	15.8 ± 5.1	8.4 ± 3.9	<0.0001

In the first model, for demographic and socio-economic variables, significant predictors were found to be gender, education, number of children and social support score. Female gender, a low level of education, increase in number of children and decrease in social support score all were positive predictors for PTSD. For Odds Ratios and p-values, please refer to Table 9. below.

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Table 9. **Model 1. Demographic and socio-economic variables**						
Variable (baseline)	**Estimate**	**SE**	**OR**	**CI 95% Lower**	**CI95% Higher**	**p-value**
Gender (Female)						
Male	-0.89	0.33	0.410	0.215	0.782	0.0068
Education (Illit.)						
Higher	-2.30	0.92	0.100	0.017	0.604	0.0121
Secondary	-1.81	0.87	0.164	0.030	0.912	0.0389
Elementary	-1.78	0.84	0.169	0.033	0.872	0.0337
Number of Childr	0.15	0.08	1.165	0.991	1.368	0.0644
Social support scr	-0.26	0.11	0.767	0.616	0.955	0.0177

In the second model, for life-style variables, the predictors that were found to be significant were exercise, smoking and hours of sleep. Not exercising, smoking and decrease in hours of sleep were positive predictors for PTSD. For Odds Ratios and p-values, please refer to Table 10. below.

(UNPUBLISHED)

Table 10. **Model 2. Life-style variables**						
Variable (baseline)	**Estimate**	**SE**	**OR**	**CI 95% Lower**	**CI95% Higher**	**p-value**
Exercs. (no ex)	-0.94	0.33	0.390	0.205	0.743	0.0042
Smoke (N.sm)	0.99	0.30	2.863	1.484	4.851	0.0011
Hours of Sleep	-0.14	0.07	0.873	0.756	1.009	0.0654

In the third model, for stressors, the predictors that were found to be significant were social and financial problems. An increasing number of social and financial problems gave a higher risk for PTSD. For Odds Ratios and p-values, please refer to Table 11. below.

(UNPUBLISHED)

Table 11. **Model 3. Stressors**						
Variable	**Estimate**	**SE**	**OR**	**CI 95% Lower**	**CI95% Higher**	**p-value**
Social probl	0.50	0.17	1.644	1.187	2.278	0.0028
Financ probl	0.27	0.14	1.305	1.001	1.702	0.0493

In the fourth model, for mental health, the predictors that were found to be significant or borderline significant were receiving psychiatric treatment, score for GHQ-1 (somatization), GHQ-2 (anxiety), and GHQ-4 (severe depression). Having received psychiatric treatment, a higher score on GHQ-1, GHQ-2 and GHQ-4 gave a higher risk for PTSD. For Odds Ratios and p-values, please refer to Table 12. below.

(UNPUBLISHED)

Table 12. **Model 4. Mental Health**						
Variable (baseline)	**Estimate**	**SE**	**OR**	**CI 95% Lower**	**CI95% Higher**	**p-value**
Psychiatric treat. (No treat)	3.25	0.90	25.918	4.435	151.478	0.0003
GHQ-1	0.27	0.14	1.306	0.997	1.712	0.0529
GHQ-2	0.52	0.12	1.679	1.325	2.128	<0.0001
GHQ-4	0.29	0.11	1.334	1.069	1.666	0.0108

In the final overall model significant predictors for PTSD were education, exercise, social support (for females), smoking, psychiatric treatment, and the subscales GHQ-2 and GHQ-4. Having less education, not exercising, having lower social support (for females), being a smoker, having received psychiatric treatment and scoring high on the GHQ anxiety and depression subscales were related to having PTSD. For Odds Ratios and p-values, please refer to Table 13. below.

(UNPUBLISHED)

Table 13.**Overall Model**						
Variable (baseline)	**Estimate**	**SE**	**OR**	**CI 95% Lower**	**CI95% Higher**	**p-value**
Education (Illit.)						
Higher	-3.08	1.37	0.046	0.003	0.670	0.0242
Secondary	-3.01	1.36	0.049	0.003	0.717	0.0276
Elementary	-3.83	1.40	0.022	0.001	0.336	0.0061
Exerc. (No ex.)	-1.49	0.61	0.225	0.069	0.740	0.0140
Social Supp. (m)	-0.27	0.28	0.776	0.441	2.267	0.3434
Social Support (f)	0.58	0.28	1.784	1.040	3.062	0.0357
Smoker (No sm.)	2.39	0.65	10.892	3.018	39.302	0.0003
Psychiatr. treatm. (No treatment)	5.01	1.21	142.857	13.888	>999	<0.0001
GHQ-2 (anxiety)	0.79	0.16	2.194	1.611	2.987	<0.0001
GHQ-4 (depress)	0.58	0.16	1.786	1.297	2.459	0.0004

When the two villages were compared, no differences between the samples were found for neither age, gender, marital status, educational level, employment status nor number of people living in the household. However, in town B, the average number of children was 4, compared to 2.9 in town A (p≤.01). When the consumption of cigarettes, "argileh", alcohol, tranquilizers and illicit drugs were compared, the two villages differed with regard to alcohol and "argileh", which were both more consumed in town A (p≤.05, and p≤.01). The samples did not differ with respect to proportion of population receiving psychiatric treatment or social support score. Further, the samples did not differ for positive life-events, negative life-events or social problems. However, the sample from town B reported more financial problems than town A (p≤.01). There was also a difference for experiencing traumatic events. The sample from town B had experienced

on average 4.6 events, compared to 3.4 in town A (p≤.01). The events most frequently heard about in both towns were imprisonment, and the most frequently experienced traumatic event was confinement to home because of danger outside. In town A, the most frequently witnessed event was military conflict, and in town B imprisonment. For further details on events, please refer to Table 3. in the presentation by Farhood, Dimassi and Lehtinen, Appendix II. A diagnosis of PTSD according to the Harvard Trauma Questionnaire was met by 26.3% of the inhabitants in town A, compared to 33.6% in town B. This difference was borderline significant (p≤.07). There was no statistically significant difference between the two towns with regard to the total GHQ-28 score, nor scores for the individual subscales.

Discussion

The large majority of the respondents had experienced at least one war related traumatic event. The mean number of traumatic events experienced by the sample is similar to the number found in some other studies in post conflict areas using the same instrument. A study on 699 randomly selected persons in Afghanistan reports that like in the present study, most of the respondents had experienced multiple trauma, with 62% experiencing four traumatic events or more. PTSD prevalence was 42%. Some of the events were the same as in the present study. It might be of interest to note differences for some of these. For example, in the present study 19.6% reported experiencing lack of food or water, compared to 56.1% in the population from Afghanistan. In the present study 7.5% report experiencing torture, compared to 10.1% in Afghanistan. In the present study 27.5% report experiencing murder of family or friends, compared to 16.0% in Afghanistan. Imprisonment was reported by 15.7% in the present study compared to 16.5% in Afghanistan (Lopez Cardozo et al., 2005). A study among the general population in Kosovo on a sample of 996 respondents reported that 95% of the population had been exposed to a traumatic event. In Kosovo, 68.1% reported experiencing lack of food or water, 27.9% torture, 27.3% reported experiencing murder of family or friends, and 3.1% reported having been imprisoned. Diagnosed with the Mini International Neuropsychiatric Interview, the prevalence of PTSD was found to be 23.5%. Women, persons over 65 years and those with lower education were at risk for PTSD.

The relationship between exposure to trauma and symptoms of PTSD, as well as the GHQ was strong. The degree of exposure has been found to strongy predict PTSD. Multiple exposure increases the risk of PTSD, as does increase in the intensity of exposure (Neuner et al., 2004; Eytan et al., 2004; Koenen et al., 2002; Boscarino, Adams, & Figley, 2004.). In the current study, exposure was related not only to PTSD, but also the GHQ score in total, as well as all its subscales. Also this is in line with earlier research, showing that exposure to traumatic events increases not only PTSD, but also other kinds of psychiatric morbidity (Boscarino et al., 2004; Karam et al., 1998; Momartin et al., 2003; O'Donnell, Creamer& Pattison, 2004).

The PTSD prevalence in the current study is high compared to studies in the general population in countries not affected by conflict. Even though the prevalence is high, it is not, however, remarkably high compared to studies in other areas with recent armed conflict. Yet, it must be emphasized that the instrument and cut-off point for diagnosis of PTSD has not been validated against other instruments or clinicians' assessments in neither Lebanon nor other Arabic speaking populations. So, although the questions in the HTQ follow the questions in the DSM-III-R, there might be reason to treat the prevalence figures with some caution.

No cut-off point has been determined for the GHQ-28 in Arabic speaking populations. A study from Kosovo used the GHQ together with the HTQ in a way similar to the present study. Their results were quite different. The mean scores for the subscales were 3.9 for somatization, 4.2 for anxiety and insomnia, 2.2 for social dysfunction and 0.9 for severe depression, compared to 2.19, 2.15, 4.36 and 1.75 in the present study (Lopes Cardozo, Vergara, Agani, Gotway, 2000). The overall score in that study was 11.1, with a PTSD prevalence of 17.1%, compared to an overall GHQ score of 10.46 in the present study, with a PTSD prevalence of 29.3%. For further discussion of cut-off score for the GHQ-28, please refer to the discussion in Farhood, Dimassi & Lehtinen, (in press). Since the GHQ-28 is supposed to measure general psychiatric morbidity, the high prevalence of PTSD should reflect in the GHQ as a correlation between the two instruments. The correlation between the instruments was indeed good, although it is difficult to say whether it is because the GHQ-28 reflects the high PTSD prevalence, the high co-morbidity of other disorders that are expected to occur with PTSD, or both.

A higher prevalence of PTSD among females than males was found in the present study. This gender difference has been found in several previous studies as well (Frans, Rimmö, Åberg & Fredrikson, 2005; Nemeroff et al., 2005; Breslau, Chilcoat, Kessler & Davis, 1999; Breslau, Davis, Andreski, Peterson and Schultz, 1997; Holbrook, Hoyt, Stein & Sieber, 2002). The gender difference was not better explained by exposure, since women in the present study were not more exposed to traumatic events, than men.

The higher prevalence in older persons is somewhat contrary to several earlier findings. However, this difference disappeared when exposure to traumatic events was controlled for. In other words, older persons were more vulnerable for PTSD because they had experienced more traumatic events than the younger participants. The fact that married persons had more PTSD than unmarried persons was also related to the fact that they were older than the unmarried persons, and so had experienced more traumatic events.

The higher level of PTSD in those with a lower level of education is in line with the majority of earlier findings (Bromet, Sonnega and Kessler, 1998; Creamer, Burgess & McFarlane, 2001; Farhood & Noureddine, 2003). It is interesting to compare this finding to the study in Kosovo by Eytan et al. (2004). The general level of education in the Kosovo sample, with 66.1% having less than high-school education, was similar to the present study, where 44.8% had less than high-school education (Eytan et al., 2004). This is far less than in samples in studies from the US or Europe that point out education as a protective factor for PTSD. This seems to indicate that education is a protective factor, regardless of the average level of education.

The current study also found a relationship between an increasing number of children and increased risk of PTSD. This is in line with earlier research indicating that parenthood adds to the stressfulness of a traumatic event (Norris et al., 2002). As in previous research, social support was related to a lower level of PTSD (Ahern et al., 2004; Lopez Cardozo et al., 2005; Farhood et al., 1993).

In the present study the inverse relationship between PTSD and amount of exercise was borderline significant. Several studies have shown that PTSD is related to

worse life-style, such as decreased exercising (Buckley, Mozley, Bedard, Dewulf &, Greif, 2004)

Smoking was reported by 33.1% of the sample. This is lower than found in an earlier study among 727 Lebanese, studied by Baddoura and Wehbeh-Chidiac (2001), who found a 53.6% prevalence of smoking. In line with earlier research, smoking was related to having PTSD (Koenen et al., 2005).

Sleeping hours and PTSD were related, this association was borderline significant. This is expected since PTSD is associated with sleep disturbances such as nightmares and difficulties falling asleep.

Social problems were related positively to PTSD. This is also as expected, since some of the symptoms for PTSD, such as emotional numbing and nervousness can cause problems in interpersonal relations.

The use of tranquilizers was reported by 7.9% of the sample. This is quite close to a study on 1000 persons randomly sampled from the Lebanese population, where use of benzodiazepines was found on 9.6% of the subjects (Naja, Pelissolo, Haddad, Baddoura & Baddoura, 2000). Tranquilizer use was, as expected, related to PTSD, since PTSD is an anxiety disorder. Psychiatric treatment was also significantly related to PTSD. This should be expected, since PTSD can be a severe disorder, often needing treatment. Furthermore, earlier research suggests that psychiatric disorders preceding a traumatic event predict PTSD (Bromet, Sonnega & Kessler, 1998).

In the final over all model, predictors for PTSD were a low level of education, not exercising, low social support (for females), smoking, psychiatric treatment, and the scores for he GHQ anxiety and depression subscales. All of these predictors have been found in association to PTSD before.

There were few differences between the samples from town A and town B. The sample from town B had experienced more traumatic events, and had an increase in PTSD prevalence compared to town A enough to be borderline significant. This again lends support to the importance of the degree of exposure as a predictor for PTSD.

Key research accomplishments

- It was established that nearly all of the respondents had been exposed to war-related traumatic events, and that the majority had personally experienced at least one or more war-related traumatic event.

- The prevalence of current PTSD was determined, and turned out to be 29.3%. The prevalence among females, 36.6% was higher than among males, 20.9%. This is far higher than the expected prevalence in developed countries. It is, however in line with similar research from other countries recovering from conflict.

- The average scores for the General Health Questionnaire (GHQ-28) with it's individual subscales were determined. The mean score was 10.46. The average for the somatization scale was 2.19, the anxiety scale 2.15, the social dysfunction scale 4.36 and for severe depression 1.75. There is no cut-off point for Arabic populations, but compared to other studies all over the world, the mean scores found in the present study were very high.

- The best predictor for PTSD was the extent of exposure to traumatic events. The PTSD score and GHQ score, also for all subscales individually, correlated highly. The GHQ score had a high correlation with exposure to traumatic events.

- Other than exposure, a low level of education, not exercising, low social support (for females), smoking, psychiatric treatment, and high scores on the GHQ-28 subscales for depression and anxiety positively predicted PTSD.

Reportable outcomes

The first article on the project has been accepted for publication and is expected to appear fall 2006 in the Journal of Transcultural Nursing (Farhood et al., in press). A second article focusing on predictors for PTSD is in progress and will be submitted before the end of April.

The results from the research were also presented at two conferences. The first presentation was under the title *"Symptom prevalence of PTSD, anxiety, depression; effect of exposure to traumatic events and mediating factors on a population from southern Lebanon"* on July 1st, 2005 at the American University of Beirut, School of Nursing centennial conference. The second presentation had he same title as the first and was given September 1st, 2005 in London at "International mental health at the IOP" conference focusing on mental health and the Millennium Development Goals. Further, an abstract has been submitted for presentation at an invited one week research seminar June 12-16, 2006 at University of Michigan. The results will also be presented at a conference by the World Psychiatric International Association July 12-16, Istanbul, Turkey.

Since the current study had already received funding, the American University of Beirut University Research Board awarded a grant, number DDF 116010 688600, so that more towns could be included in the survey. This enabled data collection in four more villages following the same method, in addition to the two originally intended. As an elaboration of the current study, the American University of Beirut, University Research Board also granted funds for research on the consequences of not only the mental, but also the physical health of the population in some adjacent towns in the South of Lebanon. The aim of this research is to relate the exposure to traumatic events and PTSD to risk factors for cardiovascular disease, such as high blood pressure, diabetes etc.

Partly based on the findings from the present study two funding applications for carrying out and evaluating intervention studies for he treatment of PTSD have been submitted.

The first one was submitted March 1st 2006 to IBM, and the second March 31st to the Eastern Mediterranean Regional Office of the World Health Organization.

One person, Ms. Tuija Lehtinen, MSc Psychology, received pay from the grant to work as a research consultant in the project.

Conclusions

Most members of the general population who remained in the two villages during the Israeli occupation were subjected to one or more war-related traumatic events. Several of the results were in line with earlier research in similar settings. The prevalence of PTSD in the sample was very high and was related to the amount of exposure to traumatic events. General psychiatric morbidity was related to both PTSD and to exposure to traumatic events. The results indicate that the events occurring during the occupation, among other things, had a strong negative effect on the mental health of the population in the area.

There is clearly a need for treatment interventions in the area. Virtually no published randomized controlled treatment trials on PTSD have been done in developing countries. These kinds of trials must be conducted, so that efficient interventions for areas like the one studied, where the PTSD prevalence is very high, can be done. Most research on war-related PTSD is done in developed countries, where living conditions, social and cultural settings are very different from developing countries. It is important to do not only treatment studies, but more research on PTSD in general in developing countries where the majority of the world's conflicts occur.

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Appendix I

EXPOSURE TO TRAUMATIC EVENTS AND PTSD

Exposure to war related traumatic events, prevalence of PTSD and general psychiatric morbidity in a civilian population from southern Lebanon

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Exposure to war related traumatic events, prevalence of PTSD and general psychiatric

morbidity in a civilian population from southern Lebanon

Abstract

Purpose: The South of Lebanon has experienced prolonged armed conflict. The current study aims to investigate the degree of exposure to traumatic events and prevalence of Posttraumatic Stress Disorder (PTSD) and nonspecific general psychiatric morbidity in a civilian population from the South of Lebanon. *Design and methods:* The design was cross-sectional with random sampling. War related traumatic events and symptoms of PTSD were assessed by the Harvard Trauma Questionnaire, general psychiatric morbidity by the General Health Questionnaire (GHQ-28). *Results:* Almost all participants, 97.7%, had experienced, witnessed or heard of a war related traumatic event. Current PTSD prevalence was 29.3%. PTSD symptoms correlated highly with GHQ-28 symptoms, r= .73 (p< .0001). The present study indicates a need for psychological interventions in the population, and studies to assess such interventions.

Key words: War events, trauma exposure, PTSD, psychiatric morbidity, Lebanon

Exposure to war related traumatic events and prevalence of PTSD in a civilian population from southern Lebanon

The Israeli occupation of Southern Lebanon ended after nearly two decades in year 2000. Although, according to the United Nations Interim Force in Lebanon (UNIFIL) there was a significant decrease of military violence in the area after the Israeli withdrawal, violent incidents continue to occur (UNIFIL, 2005). Experiencing traumatic events and other difficulties associated with the occupation and its aftermath can be expected to affect the mental health of the people living in the area.

The disorder perhaps most associated with exposure to traumatic events is Posttraumatic Stress Disorder (PTSD), code 309.81 in the DSM-IV. It is defined as an anxiety disorder resulting from exposure to traumatic events. These events typically involve serious threat of death or injury, to which the individual responds with intense fear and helplessness (American Psychiatric Association, 1994). Most people experience at least one traumatic event during their life-time, and a proportion of them will develop PTSD. The National Comorbidity Survey reports a life-time prevalence rate of 10.4% in women, and 5.0% in men in the general population in the United States (Kessler et al., 1995). In post-conflict and conflict ridden societies the prevalence rates in the general population can be much higher (Eytan et al. 2004, Lopez Cardozo et al. 2005). A study looking at life time prevalence of PTSD, mood- and anxiety disorders in four post-conflict societies, namely Ethiopia, Cambodia, Palestine and Algeria, the researchers found PTSD prevalences ranging from 15.8% for Ethiopia to 37.4% for Algeria (de Jong, Komproe & Ommeren, 2003).

The disorder characteristically exists together with other disorders, like substance abuse, personality disorders, depression and anxiety (Frans, 2003; Kessler et al., 1995). According to the National Comorbidity Survey in the United States, 88% of the men and

79% of women with chronic PTSD met the criteria of at least one other psychiatric diagnosis (Kessler et al., 1995).

Exposure

Several studies have confirmed that as the level of exposure to traumatic events, such as the number or intensity of the experienced events, increases, so does the rate of PTSD (Breslau et al., 1999; Cao, McFarlane & Klimidis, 2002; Frans, Rimmö, Åberg & Fredrikson, 2004; Neuner et al. 2004; Norris et al., 2002). It also seems that the type of event experienced, as well as the person's perception of the event, influence whether the disorder develops or not (Frans, Rimmö, Åberg & Fredrikson, 2004; Norris et al., 2002; Creamer, McFarlane & Burgess, 2005).

Other Influencing Factors

The majority of studies agree that women, young persons, and those with a low level of education are more susceptible to PTSD (Norris et al. 2002; Creamer, Burgess & McFarlane, 2001; Farhood & Noureddine, 2003). Most studies also find that social support can be a protective factor, although the interaction between social support and gender varies between studies (Ahern et al. 2004; Koenen et al. 2002; Norris et al, 2002; Simeon, Greenberg, Nelson, Schmeidler & Hollander 2005; Koenen, Stellman, Stellman & Sommer 2005; Farhood & Noureddine, 2003).

Conflicts and Consequences on Mental Health

Around the world, armed conflicts impact the lives of millions of people. The World Disaster Report for the year 2001 states that between 1991 and 2000 globally on average 31 million people per year were affected by conflicts. Less than 7% of those killed in armed conflicts were living in nations of high human development. Conflicts reportedly killed over three times more people during the last decade than natural disasters (The International Federation of Red Cross and Red Crescent Societies, 2001).

Unfortunately the vast majority of research on Posttraumatic Stress Disorder is done in the countries least affected by armed conflict. Out of 169 studies on war and PTSD in PubMed from January 2003 to September 2005, only 10% were done on populations in Asia, Africa and South America. In other words there is comparatively little knowledge of the impact of armed conflict on the general population in countries most affected by armed conflict.

In light of the deficiency in current knowledge for conflict areas, the South of Lebanon emerges as an important and relevant area to study. In this study we aimed at investigating the degree of exposure to traumatic events, level of PTSD and general psychiatric morbidity among the general population living in the formerly occupied region of South Lebanon.

Method

Design and Procedure

The current study is part of a larger study investigating consequences on the mental health of the general population in seven adjacent towns in connection with the end of the Israeli occupation in south Lebanon. The current study was cross sectional in nature, targeting the general population in two of the towns, (A) and (B). A is a rather

large community town with a few thousand inhabitants in the winter, and significantly

more in the summer. B is a smaller village adjacent to A, both are within a few miles

from the Israeli border. Both towns, though predominantly Christian, also have Muslim

inhabitants. To be eligible to participate in the study the participants had to be adults over

20 years of age and permanent residents of the village, as well as having lived there for at

least two years during the occupation of the area between years 1978 and 2000.

Sample Size and Power Analysis

Sample size determination was based on detecting a 20% (CI 15-25%) expected

prevalence of PTSD. The sample size required for this was calculated to be 250. For this

sample size, and with a power of 80% allowing for a 5% risk of type I error, the smallest

detectable effect size was $w = 0.117$. Cohen (1988) considers an effect size of 0.1 to be

small, 0.3 to be medium and 0.5 to be large. The analysis was done using the PASS

software part of the NCSS statistical package.

Instruments

Exposure and PTSD

To assess traumatic events and symptoms of PTSD parts I and IV of an already

available Arabic translation of the Harvard Trauma Questionnaire (HTQ), Indochinese

version, were used. The HTQ consists of four parts. Part I asks about war events that a

civilian population might have been subjected to during their life-time. Part IV is a list of

symptoms that correspond to DSM-III-R criteria for current PTSD as well as some

culturally specific symptoms. The answers in the last part yield a score, with a cut-off

point for diagnosis of PTSD. Parts II and III ask for a more thorough description about

the worst traumatic event experienced, and about head injury. It was decided that these

parts were not necessary for the purposes of the current study. For the Arabic translation the questions had been translated and back-translated for research on Iraqi refugees in Sweden according to the method of Brislin (Brislin, 1973; Søndergaard, 2002). However, since spoken Arabic can differ significantly between different parts of the Arab world the wording was slightly altered to fit Lebanese Arabic.

To adapt the instrument to the conditions in the south of Lebanon, some events taken from the Bosnian version of the HTQ were added to the list of traumatic events. (The Harvard Program in Refugee Trauma). The questions used for diagnosing PTSD are based on the DSM-III-R. The HTQ inter-rater reliability is high, r= 0.93 for the traumatic events, and r= 0.98 for trauma related symptoms. Test-retest reliability (one-week interval) is also high, r= 0.89, p<.0001, for traumatic events, and r= 0.92, p<0001, for trauma symptoms. Cronbach's alpha for internal consistency is 0.90 for traumatic events, and 0.96 for traumatic symptoms (Mollica et al., 1992). For the Arabic version used in the current study Cronbach's alpha was calculated to be 0.87 for the symptom part in the HTQ. In the present study the extent of exposure and the symptoms for PTSD were quantified so that each participant received a total exposure and PTSD symptom score for all events according to the HTQ manual. The PTSD diagnosis in the present study was determined in accordance with the procedure in the manual for the HTQ, using a predetermined cut-off score.

General Psychiatric Morbidity

To measure current general psychiatric morbidity the General Health Questionnaire-28 (GHQ-28) was used. The items of GHQ-28 can be divided into four scales; somatic symptoms, anxiety and insomnia, social dysfunction and severe depression. The questions on the categories anxiety and insomnia and severe depression

have been found valid instruments for assessing anxiety and depression (Goldberg &

Hillier, 1979). The correlation coefficient with a clinical rating was found to be .70 for

the anxiety subscale and for the depression scale .56 (Goldberg & Hillier, 1979). The

structure remains the same across different settings and different languages (Werneke,

Goldberg, Yalcin & Ustun, 2000). The GHQ-28 has not been validated in Arabic.

However, other versions of the GHQ, namely GHQ-30 and GHQ-12, have been found

valid instruments for psychiatric screening in an Arabic speaking population (El Rufaie &

Daradkeh, 1996). The Cronbach's alpha for the current study was 0.87. The GHQ score

for every question was added to yield a total score for each scale, as well as all scales for

the total score. Cut-off points used for determining the threshold score for a probable

clinical diagnosis for the GHQ-28 vary over different populations. Goldberg et al (1997)

report varying thresholds over 15 sites around the globe. These thresholds, representing

the 60th and 80th percentiles, ranged from score 3 to score 8. The authors choose

thresholds of 5/6 to represent the 15 centres. In an earlier study Goldberg (1972)

suggested a threshold of score 5 above which a person is considered a probable case.

Since there is no information on an Arabic population we decided to use a threshold of

score 5 as suggested by Goldberg.

Procedure

There is no data on the population size of the two towns, nor specific

demographic data for neither A nor B. Hence UN population statistics for Lebanon (year

2002) were used to build quotas for gender and age to ensure representation of all gender

and age groups (United Nations Population Division). Sample size was aimed at 250

subjects in total. A power calculation determined that this was enough to detect an

expected 20% rate of PTSD in the sample.

The map of A was divided into sampling areas corresponding approximately to city blocks. The areas were numbered and selected in random order. In a selected area each eligible household and all eligible members were invited to participate. There were no maps available for B, and thus a different sampling procedure had to be applied. A centrally located roundabout was chosen and a pen was spun to determine the direction of sampling. Every second house on the left and every second house on the right side of the road were chosen. Every time it was possible to take a new turn the pen was spun again.

The subjects were recruited and interviewed in their homes or work places if the work place was regarded as a suitable place for interviewing. The interview lasted about 20 minutes. Interviews were chosen over self-report measures because this is the preferred method of conducting surveys in Lebanon, as well as because it was expected that some of the respondents would not have a sufficient level of education to answer self-report questionnaires. A mail survey was out of the question since the area has no postal addresses. Interviews could not be carried out over the phone since there are no telephone catalogues for the area. The interviewers were senior and graduate students from the American University of Beirut (AUB). Most interviewers were female, which was considered positive since it was anticipated that male interviewers might have difficulty interviewing females in private. The interviewers had all undergone sessions on the subject of the study, interviewing technique and the specific questionnaire used, as well as how to use the age and gender quotas for the sampling. In addition they were asked to practice interviewing on friends or family, and report back the age, gender and education level of the interviewed person, as well as questions and comments on the interview. In the field they were always accompanied by a research assistant acting as a

field supervisor in charge of the sampling procedure and continuously providing feedback on the interviewers' work.

The participants were asked for oral informed consent, remained anonymous throughout the study, and were not financially compensated. The ethical approval for the study was granted by the American University Institutional Review Board.

Due to the very sensitive political situation in the area anonymity was devoted special attention in the study. This is the main reason why written informed consent was decided against. Further, no records kept for the sampling procedure were specific enough to point out specific houses or persons interviewed. The interviewers were also asked to carry with them university identification cards as proof of their identity and connection to the university. Furthermore, in order to ensure the anonymity and safety of the participants, the interviewers were instructed to refer all but very general questions about the study and recruitment of participants to the field supervisor. Anonymity posed a special challenge also not only for security but also for cultural reasons. Guests in homes are expected to be entertained with as many family members as possible present. Hence for a guest, that is the interviewer, asking a family member to come apart from the group was often experienced as very culturally inappropriate. The importance of anonymity, and how to explain the importance of anonymity to the other members of the household were continuously stressed and discussed with the interviewers.

Results

Sample

Table 1.

Data analysis was carried out in SAS, V8.1 (SAS Institute Inc, Cary, NC, USA). The total number of participants was 256, with 129 from A and 127 from B. the response rate was 82%. There were slightly more females than males, 53.5% versus 46.5%. The mean age was 40 (± 15.9) years. The largest age group was the one between 20-29 years, representing almost a third of the sample. Of the females 8.8%, and of the males 3.4%, reported being illiterate. Having elementary education was reported by 36.0% of the females and 42.9% of the males. Approximately one third of males and females had secondary education, and one fourth of males and females had higher than secondary education. Among males, 57.1% reported to be working, among women 27.2%, with 55.2% of the women reporting to be a housewife. The percentage of married people was 56.3% among males and 62.5% among females, compared to 42.9% of males and 28.7% of females who reported to be single, with the rest being either widowed or divorced.

Traumatic Events

Table 2.

Table 2 illustrates the frequency and degree of exposure to traumatic events. Almost everyone, i.e. 97.7% of the sample, had at least heard about a war related traumatic event. The majority or 86.7%, had personally experienced at least one. The most frequently personally experienced traumatic event was confinement to home because of danger outside, experienced by 65.5% of the total sample, being forced to hide, experienced by 36.5%, and murder of family or friend, experienced by 27.5%. The most frequently witnessed events were imprisonment (44.7%), combat situation (41.2%), and serious injury (32.6%). The events most frequently heard of were imprisonment (60.4%), combat situation (46.3%) and murder of stranger or strangers (45.7%). The

events that the least proportion of people reported having experienced was rape or sexual abuse, 0.4%, murder of stranger or strangers, 5.9%, and being lost or kidnapped, 5.9%.

Symptoms of PTSD and General Psychiatric Morbidity

Table 3.

The total prevalence rate of current PTSD in the population was 29.3%. The prevalence among females was 36.6%, compared to 20.9% among males (p≤ .0067). PTSD was most common in people aged over 40, with a prevalence of slightly over 40%. For the age group 30-39 the prevalence was 14.0%, and for the age group 20-29, 16.4% (p≤ .0064). The relationship between PTSD and education was inverse, so that people with more education tended to have less PTSD. The prevalence of PTSD among illiterate persons was 68.8%, among those with elementary education 33.3%, among those with secondary education 26.3% and 16.4% among people reporting to have higher then secondary education (p≤ .0004). Of those who worked, 24.2% had current PTSD, compared to 32.7% among those not working (p≤ .1530). Of those married, 34.9% had PTSD, compared to 19.5% of those not married (p≤ .0123).

Table 4.

The mean total GHQ score in our sample was 10.46 out of 28, the possible maximum. The total score correlated highly with the PTSD symptom score, r = .73 (p≤ .0001). The mean scores for the subscales were 2.19 for somatization, 2.15 for anxiety, 4.36 for social dysfunction and 1.75 for severe depression. Maximum score for each scale was 7. All subscales correlated significantly with the PTSD symptom score (p≤ .01). The

scale that was most correlated to the PTSD symptom score was the anxiety subscale, r = .71, the scale that was least correlated with the PTSD symptom score was social dysfunction, r = .19.

Discussion

A large majority of the participants in the study had been exposed to at least one war related traumatic event, several of them had experienced more than one event. These findings are in accordance with other studies done in similar settings. Eytan et al. (2004), for example found that 97.4% of the sample from the general population in Kosovo reported in some way experiencing one of the traumatic events in the HTQ, comparable to the 97.7% in the present study. Although the study of Eytan et al. used a different instrument for the assessment of PTSD, they found a 23.5% prevalence of current PTSD. This is less than the 29.3% found in the present study, yet both studies find prevalence rates that are significantly higher than the average prevalence rates found in populations not living in post-conflict areas.

The PTSD prevalence in the current study was significantly higher among older age groups compared to the youngest age groups, as well as in those who had a low level of education compared to those with a high level of education. The effect of age seemed at first to be contrary to what most other studies have found, with younger age groups being more vulnerable for PTSD. However, when exposure was controlled for, the effect of age disappeared; older people had been exposed to more traumatic events than

younger people, and so the increase in prevalence rates of PTSD in older people was better explained by the increase in exposure than by age itself.

Women were significantly more likely to have PTSD than men, and married people were more likely to have PTSD than unmarried people, although the effect of marital status disappeared when exposure was controlled for. In other words, older people were more likely to be married, and since older people had been more exposed to traumatic events they also exhibited more symptoms of PTSD.

These findings are in accordance with several earlier studies indicating that the degree of exposure to traumatic events in terms of number and intensity of events experienced, is a very important determinant of whether a person will develop PTSD or not. They are also in accordance with earlier studies indicating that female gender and a low level of education are vulnerability factors for PTSD (Eytan et al. 2004; Ahern et al. 2004; Koenen et al. 2002).

The PTSD score correlated highly with the score of the General Health Questionnaire. It is of course difficult to say whether this is because the GHQ reflects the high level of PTSD in the population, or the high psychiatric comorbidity often found with PTSD. Furthermore, as expected the PTSD symptom score and the anxiety subscale of the GHQ correlated very highly. This should come as no surprise since PTSD is an anxiety disorder, as well as being highly comorbid with other anxiety disorders. Since there is no cut-off point for the GHQ-28 for Arabic populations, we looked at both the numeric values as well as dividing the scores above and below a threshold of 5. This threshold is used to identify probable cases as reported by Goldberg (1972) where a score above the threshold indicates a 50% chance of being a psychiatric case. Looking at the categorized GHQ scores with a threshold of 5, 87.7% of the sample was above the

threshold. All 73 respondents with PTSD had scores above the threshold, compared to 83% of respondents without PTSD. Our sample reported more symptoms than any of the populations studied by Goldberg et al (1997). However, this percentage must be treated with great caution since thresholds can vary from one population to another.

A similar study done in Kosovo in which both the HTQ and the GHQ-28 were used together, the authors found a PTSD prevalence rate of 17.1% together with a general GHQ-28 score of 11.1. The average scores for the subscales were 3.9 for somatization, 4.2 for anxiety and insomnia, 2.2 for social dysfunction and 0.9 for severe depression (Lopes Cardozo, Vergara, Agani, Gotway, 2000). This response pattern is quite different from the present study, in which the mean for the total score was 10.46 and the mean for the respective subscales were 2.19, 2.15, 4.36 and 1.75. No cut-off point was used in the Kosovo study.

There has been some debate on the cultural validity of the PTSD diagnosis as such. In the current study a large proportion of the population did fit the criteria of PTSD. However, the results on the GHQ were also high. The GHQ taps a wide range of symptoms, and perhaps the high values on the GHQ represent posttraumatic sequelae not captured within the PTSD diagnosis. On the other hand, the area has suffered several structural changes such as extensive migration, severe economic stagnation and restrictions in freedom of movement of people and goods with the closing of the Israeli border, and which might affect the well-being of the people. These issues were spontaneously brought up by several of the respondents, who found them disturbing.

Even though one can question the limits of the PTSD diagnosis, the high prevalence of the disorder and issues associated with it make the research and treatment of PTSD in post-conflict areas perhaps especially important. It is important not only with

concern to the individual's well being, but also in a context of ensuring future peace and security of the area. Trauma has a tendency to repeat itself. A study looking at exposure to trauma and PTSD in holocaust survivors and comparing it to PTSD and depressive and anxiety disorders in their offspring, found that PTSD in parents was a risk factor for PTSD, and trauma exposure for depression in their offspring (Yehuda, Halligan & Brierer, 2001). Several studies have shown that traumatized individuals are more likely to become either victims or perpetrators again (Begic & Jokic-Bekic, 2002; Scarpa, 2003). A study comparing patients with PTSD to patients with other anxiety disorders, and matched controls found the highest scores of suicide risk, anger and impulsivity in the group with PTSD (Kotler, Iancu, Efroni, Amir, 2001). A study on American combat veterans revealed that compared to veterans without PTSD, veterans with PTSD reported higher aggression and had a significantly higher incidence of potentially dangerous firearm-related behaviors. In another study on veterans in treatment for PTSD it was found that 71.6% had a history of incarceration (Hartl et al., 2005). A study on 799 persons from the general population in Afghanistan where PTSD prevalence was 42% reports that over 80% of the respondents reported feelings of "a lot of" or "extreme" hatred (Lopez Cardozo et al., 2004). In this context, a high PTSD prevalence among populations in areas that have suffered from, and are still vulnerable to further conflict, warrants great concern.

<center>Implications of the Results and Conclusions</center>

A large majority of the population in the study had experienced one or more war related traumatic event. Compared to the general population in countries that are not post-conflict societies, like the United States where the life-time prevalence of PTSD is 7.8%,

the 29.3% prevalence of current PTSD in the present study is exceptionally high (Kessler et al., 1995). The results of the present study strongly suggest that the war related traumatic events in conjunction with the occupation have, together with other factors, had a severe adverse impact on the mental health of the general population in the two towns studied.

Since one of the criteria for a PTSD diagnosis according to the DSM-IV is that it impairs daily functioning, a high PTSD prevalence rate in the general population is expected to have negative consequences for the working capacity and the functioning of the society in general. This needs to be taken into account in public health and development planning for the concerned area in the South of Lebanon.

The present study indicates a clear need for psychological interventions among the general population, and further studies to assess the implications of such interventions. Other interesting subjects for further study might be the impact of the deterioration of the economic situation and how this might mediate the effect of traumatic events. This subject was spontaneously brought up by a majority of the respondents, most of whom perceived that they suffered more from the current bad economic situation than from the traumatic events taking place during and after the occupation. Furthermore, regarding the role of emigration, one of the villages had a significant proportion of its inhabitants move to a specific European country either during or after the occupation. A comparative study between a proportion of the population that emigrated and the proportion that stayed might give very interesting information on how changing external circumstances mediate the effect of traumatic events.

In conclusion, the present study showed that even 5 years after the Israeli withdrawal from the South of Lebanon, and significant decrease in the armed conflict, the

population still suffers from long-term mental health sequelae. The presence of PTSD and other psychiatric morbidity such as somatization, anxiety, social dysfunction and severe depression is still very high. It is important that governmental institutions, non-governmental organizations and others concerned with the rebuilding and development of the South of Lebanon take such issues into account.

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Table 1

Demographic Characteristics of the Study Sample

	Males		Females	
	N	%	N	%
Total	119	100	137	100
Age				
20-29	40	33.6	38	28.4
30-39	30	25.2	31	23.1
40-49	20	16.8	28	20.9
50-59	12	10.1	14	10.5
60+	17	14.3	23	17.2
Education				
Illiterate	4	3.4	12	8.8
Elementary	51	42.9	49	36.0
Secondary	37	31.1	40	29.4
Higher	27	22.7	35	25.7
Employment				
Working	68	57.1	37	27.2
Housewife	0	0.0	75	55.2
Not working	51	42.9	24	17.7
Marital Status				
Married	67	56.3	85	62.5

Single	51	42.9	39	28.7
Divorced	0	0.0	2	1.5
Widowed	1	0.8	10	7.4

Table 2.

Harvard Trauma Questionnaire, Exposure to Traumatic Events, Order as Asked

	Experienced		Witnessed		Heard about		Any	
	N	%	N	%	N	%	N	%
At least one	221	86.7	210	82.4	241	94.5	249	97.7
Lack of food or water	50	19.6	41	16.1	85	33.3	111	43.5
Ill health without access to medical care	40	15.8	47	18.5	79	31.1	110	43.3
Lack of shelter	16	6.3	25	9.8	64	25.1	84	33.1
Imprisonment	40	15.7	114	44.7	154	60.4	193	75.7
Serious injury	23	9.0	83	32.6	106	41.6	158	62.0
Combat situation	39	15.3	105	41.2	118	46.3	173	67.8
Brainwashing	3	1.2	7	2.8	20	7.8	24	9.4
Rape or sexual abuse	1	0.4	2	0.8	20	7.8	21	8.2
Forced isolation from others	21	8.2	26	10.2	71	27.8	84	32.9
Being close to death	25	9.8	52	20.4	81	31.8	113	44.3
Forced separation from family members	54	21.2	46	18.0	77	30.2	112	43.9
Murder of family or Friend	70	27.5	52	20.4	64	25.1	117	45.9
Unnatural death of family or friend	53	20.8	41	16.1	64	25.1	116	45.5
Murder of stranger or Strangers	15	5.9	38	15.0	116	45.7	136	53.5
Lost or kidnapped	15	5.9	28	11.0	76	29.9	93	36.6
Torture	19	7.5	24	9.4	97	38.0	109	42.8

Confiscation or
destruction of personal

property *	37	14.6	44	17.4	79	31.2	107	42.3
Exposure to frequent and unrelenting sniper fire*	35	13.8	46	18.2	66	26.1	90	35.6
Forced evacuation under dangerous conditions*	68	26.8	39	15.4	56	22.1	108	42.7
Beating to the body*	21	8.2	36	14.1	75	29.4	93	36.5
Extortion or robbery*	38	14.9	32	12.6	83	32.6	106	41.6
Forced to hide*	93	36.5	46	18.0	65	25.5	130	51.0
Present while someone searched for people or things in your home*	49	19.3	45	17.7	88	34.7	121	47.7
Confined to home because of danger outside*	167	65.5	80	31.4	76	29.8	178	69.8
Any other very frightening situation or where you felt your life endangered*	50	20.1	10	4.0	12	4.8	59	23.7

*Questions added from the Bosnian version of the HTQ

Table 3

Prevalence of Current PTSD and Relationship between PTSD and Demographic

Variables

	PTSD		No PTSD		p-value
	N	%	N	%	
Total	73	29.32	176	70.68	
Gender					
Male	24	20.87	91	79.13	
Female	49	36.57	85	63.43	0.0067
Age					
20-29	12	16.44	56	83.56	
30-39	14	24.14	43	75.86	
40-49	19	41.30	27	58.70	
50-59	11	44.00	14	56.00	
60+	13	40.63	19	59.38	0.0064
Education					
Illiterate	11	68.75	5	31.25	
Elementary	32	33.33	64	66.67	
Secondary	20	26.32	52	73.68	
Higher	10	16.39	49	83.61	0.0004

Employment

Working	24	24.24	73	75.76	
Not working	49	32.67	97	67.33	0.1530

Marital Status

Married	52	34.90	96	65.10	
Not Married	17	19.54	65	80.46	0.0123

Table 4

GHQ Scores and Correlation with PTSD Symptom Score

	Mean	SD	Pearson's r	p-value
GHQ Total	10.46	5.5	0.73	$< .0001$
Somatization	2.19	1.78	0.62	$< .0001$
Anxiety	2.16	2.24	0.71	$< .0001$
Social dysfunction	4.36	1.75	0.19	$< .0028$
Severe depression	1.75	1.79	0.56	$< .0001$

Appendix II - Presentation at SoN Centennial Conference and IOP in London

Appendix III

Posttraumatic Stress Disorder, Anxiety and Depression among civilian population in South Lebanon

Laila F. Farhood, Ph.D, C.S, R.N, professor, AUB School of Nursing, **Hani Dimassi, M.P.H, Ph.D, AUB School of Nursing**

Abstract

Over 20 years, until May 2000, the south of Lebanon was under occupation. During this time the residents of the area were exposed to several different events that have the potential to cause psychiatric distress, especially Posttraumatic Stress Disorder (PTSD). The consequences of the occupation on the mental health of the population in the area has until now not been studied.

The first purpose of this study was to investigate the prevalence of PTSD symptoms among residents of the formerly occupied region. Prevalence of symptoms for depression, anxiety, somatization and social dysfunction were assessed as well. The second purpose was to investigate weather symptom development can be predicted by the amount of exposure to traumatic events. The third purpose of the study was to see if life-style and socio-economic factors mediate the impact of traumatic events on symptom development.

The method of the study was to conduct structured interviews among the general population from two adjacent towns in the south of Lebanon. The sample consisted of 250 randomly selected persons. Traumatic events and symptoms of PTSD were measured by the Harvard Trauma Questionnaire, whereas symptoms for somatization, anxiety, social dysfunction and depression were assessed by the 28 item General Health Questionnaire.

Results are not yet finalised, however we expect to find PTSD present in the population. We also expect individuals who experienced more traumatic events to display more

symptoms. When extent of exposure is not enough to predict symptom prevalence, we expect that some variation can be explained by life-style and socio-economic factors.